

HISTORIC COLUMBIA RIVER HIGHWAY,
CROWN POINT VIADUCT
Troutdale vicinity
Multnomah County
Oregon

HAER No. OR-36-C

HAER
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

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HISTORIC COLUMBIA RIVER HIGHWAY,
CROWN POINT VIADUCT
east of Corbett
Troutdale Vic.
Multnomah County
Oregon

HAER No. OR-36-C

Note: For shelving purposes at the Library of Congress, Troutdale vicinity in Multnomah County was selected as the "official" location for the various structures in the Historic Columbia River Highway documentation.

Roger Keiffer, Oregon Department of Transportation Photographer, September 1995.

HAER No. OR-36-C-1 AERIAL VIEW OF CROWN POINT VIADUCT AND VISTA HOUSE, LOOKING SOUTHEAST. SAME PHOTO AS HAER No. OR-36-17.

Brian Grogan, Photographer, June 1994.

HAER No. OR-36-C-2 ROAD-LEVEL VIEW OF CROWN POINT VIADUCT AT REAR OF VISTA HOUSE SHOWING SIDEWALK, ROADWAY, AND STAIRCASE IN RETAINING WALL.

Jet Lowe, HAER Photographer, July 1995.

HAER No. OR-36-C-3 RAILING DETAIL AT CROWN POINT SHOWING OVERLOOK AND VIADUCT, LOOKING NORTH. PHOTOGRAPH TAKEN FROM THE OBSERVATION DECK OF VISTA HOUSE.

HAER No. OR-36-C-4 PERSPECTIVE OF ROAD LOOKING NORTH AT CROWN POINT HALF VIADUCT AND RETAINING WALL. WASHINGTON STATE IN BACKGROUND.

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Location: Encircling the site of Vista House, a masonry public comfort station, on the Historic Columbia River Highway, beginning at milepost 24.

UTM: 10/559070/5042930
10/559130/5042990
Quad: Bridal Veil, Oreg.--Wash.

Date of Construction: 1914

Engineer: Samuel C. Lancaster, Consulting Engineer to Multnomah County and Assistant State Highway Engineer, Oregon State Highway Commission.

Builder: Pacific Bridge Company, Portland
Robert Lee Ringer, subcontractor

Owner: Oregon Department of Transportation

Present Use: Vehicular and pedestrian traffic

Significance: A half-viaduct designed to carry pedestrians around the outer edge of a spiral section of roadway around the top of a 725' promontory on the Historic Columbia River Highway. Ingenious use of reinforced-concrete and rubble masonry to create an aesthetically-pleasing structure.

Historian: Robert W. Hadlow, Ph.D., September 1995

Transmitted by: Lisa M. Pfueller, September 1996

PROJECT INFORMATION

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Division of the National Park Service, U.S. Department of the Interior. The Historic Columbia River Highway Recording Project was cosponsored in 1995 by HABS/HAER, under the general direction of Robert J. Kapsch, Ph.D., Chief, and by the Oregon Department of Transportation (ODOT), Bruce Warner, Region One Manager; in cooperation with the US/International Committee on Monuments and Sites (ICOMOS), the American Society of Civil Engineers (ASCE), and the Historic Columbia River Highway Advisory Committee.

Fieldwork, measured drawings, historical reports, and photographs were prepared under the direction of Eric N. DeLony, Chief of HAER; Todd A. Croteau, HAER Architect, and Dean A. Herrin, Ph.D., HAER Historian. The recording team consisted of Elaine G. Pierce (Chattanooga, Tennessee), Architect and Field Supervisor; Vladimir V. Simonenko (ICOMOS/Academy of Fine Arts, Kiev, Ukraine), Architect; Christine Rumi (University of Oregon) and Pete Brooks (Yale University), Architectural Technicians; Helen I. Selph (California State Polytechnic University, Pomona) and Jodi C. Zeller (University of Illinois, Urbana-Champaign), Landscape Architectural Technicians; Robert W. Hadlow, Ph.D. (ASCE/Pullman, Washington), Historian; and Jet Lowe (Washington, DC), HAER Photographer. Jeanette B. Kloos, ODOT Region One Scenic Area Coordinator; and Dwight A. Smith, ODOT Cultural Resources Specialist, served as department liaison.

Additional information about the Historic Columbia River Highway can be found under the following HAER Nos.:

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OR-36-A	HISTORIC COLUMBIA RIVER HIGHWAY, SANDY RIVER BRIDGE AT TROUTDALE
OR-36-B	HISTORIC COLUMBIA RIVER HIGHWAY, SANDY RIVER BRIDGE (Stark St. Bridge)
OR-36-D	HISTORIC COLUMBIA RIVER HIGHWAY, CROWN POINT
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OR-23	SHEPPERDS DELL BRIDGE
OR-36-E	HISTORIC COLUMBIA RIVER HIGHWAY, BRIDAL VEIL FALLS BRIDGE
OR-36-F	HISTORIC COLUMBIA RIVER HIGHWAY, WAHKEENA FALLS FOOTBRIDGE

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OR-36-G HISTORIC COLUMBIA RIVER HIGHWAY, WEST MULTNOMAH FALLS
VIADUCT
OR-36-H HISTORIC COLUMBIA RIVER HIGHWAY, MULTNOMAH CREEK BRIDGE
OR-36-I HISTORIC COLUMBIA RIVER HIGHWAY, MULTNOMAH FALLS
FOOTBRIDGE (Benson Footbridge)
OR-36-J HISTORIC COLUMBIA RIVER HIGHWAY, EAST MULTNOMAH FALLS
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OR-36-O HISTORIC COLUMBIA RIVER HIGHWAY, TOOTHROCK TUNNEL
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OR-56 COLUMBIA RIVER HIGHWAY BRIDGES

For shelving purposes at the Library of Congress, Troutdale
vicinity in Multnomah County was selected as the "official"
location for the various structures in the Historic Columbia
River Highway documentation project (HAER No. OR-36).

HISTORIC COLUMBIA RIVER HIGHWAY

The Pacific Northwest's Columbia River Highway, later renamed the Historic Columbia River Highway (HCRH), was constructed between 1913 and 1922. It is one of the oldest scenic highways in the United States. Its design and execution were the products of two visionaries: Samuel Hill, lawyer, entrepreneur, and good roads promoter and Samuel C. Lancaster, engineer and landscape architect, with the assistance of several top road and bridge designers. In addition, many citizens provided strong leadership and advocacy for construction of what they saw as "The King of the Roads."

Often, the terms "scenic highways" and "parkways" are used synonymously. Scenic highways are best described as those roads constructed to provide motorists with the opportunity to see up-close the landscape's natural beauty. Parkways are roads or streets often associated with city beautiful campaigns prevalent in the United States in the late 19th and early 20th centuries. They were part of a movement to create park-like settings out of wastelands. Many of the scenic highways in the United States are associated with the country's national park system and were built in the years following the First World War.

Beginning in the 1910s and early 1920s, the National Park Service (NPS) began construction of well-engineered paved roads with permanent concrete and masonry bridges and viaducts to make its park sites more accessible to an increasingly mobile tourist population. These included roads such as "Going-to-the-Sun Highway" in Glacier National Park and "All-Year Highway" in Yosemite National Park. The Historic Columbia River Highway, unlike many of its counterparts, was constructed through county-state cooperation. It became a state-owned trunk route or highway, part of a growing system of roads that criss-crossed Oregon.

Samuel Hill, once an attorney for James J. Hill and his large railroad empire, and later a Pacific Northwest investor and entrepreneur, was the state of Washington's most vocal good roads spokesman in the late 19th and early 20th centuries. He promoted good roads at Seattle's Alaska-Yukon-Pacific Exposition in 1905, and shortly thereafter helped to establish the department of highway engineering at the University of Washington. With little success in convincing the Washington State Legislature to fund a major highway along the Washington side of the Columbia River, Hill found more receptive ears and pocketbooks with Oregon lawmakers and Portland area businessmen. Construction began on the Historic Columbia River Highway in 1913. By 1922, it was

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complete, covered in a long-wearing and smooth-riding asphaltic-concrete pavement.¹

Hill hired Samuel Lancaster, an experienced engineer and landscape architect to design the Historic Columbia River Highway. Lancaster was noted for the boulevards that he created around Seattle's Lake Washington in the first decade of the 20th century as a component of the city's Olmsted-designed park system. In 1909 Lancaster had become the first professor of highway engineering in Hill's department at the University of Washington. Lancaster had accompanied Hill and others to Paris in 1908 for the First International Road Congress, and afterwards the delegation toured western Europe to learn about continental road-building techniques. Seeing roads in the park-like setting of the Rhine River Valley inspired Hill to build a highway along the Columbia River Gorge. By 1912, Lancaster was conducting road-building experiments at Hill's estate, Maryhill, 100 miles east of Portland on the Washington side of the Columbia. The route they subsequently created was not a parkway, in the truest sense, but instead a scenic highway.²

The Columbia River Gorge's natural features distinguish it as the ideal setting. This relationship between the natural landscape and the Historic Columbia River Highway was described best by locating engineer John Arthur Elliott. He wrote, "All the natural beauty spots were fixed as control points and the location adjusted to include them." The road passed several waterfalls and rock outcroppings, including Thor's Heights (Crown Point), Latourell Falls, Shepperd's Dell, Bishop's Cap, Multnomah Falls, Oneonta Gorge and Falls, Horsetail Falls, Wahkeena Falls, and Tooth Rock. Natural features were made an integral component of the Historic Columbia River Highway.³

According to Lancaster, "There is but one Columbia River Gorge [that] God put into this comparatively short space, [with] so many beautiful waterfalls, canyons, cliffs and mountain domes." He believed that "men from all climes will wonder at its wild grandure [sic] when once it is made accessable [sic] by this great highway." In addition, the promoters sought to create a route that utilized the most advanced techniques available for road construction. In reflecting on the work's progress, Lancaster acknowledged that because of the country's rugged climate, with its wind and rain and winter weather, it had been "slow and tedious and somewhat more expensive than ordinary work." Nevertheless, he and his associates felt they were accomplishing a worthwhile task because, "for if the road is completed according to plans, it will rival if not surpass anything to be found in the civilized world."⁴

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In an more practical light, many observers saw the Historic Columbia River Highway as a lifeline connecting Portland with the many commercial and agricultural areas along the Columbia River. Some even envisioned it as part of a spider web of similarly constructed routes radiating out towards central and eastern Washington, and northern Idaho, meeting routes leading to other parts of the region and nation.

The Historic Columbia River Highway was a technical and civic achievement of its time, successfully mixing sensitivity to the magnificent landscape and ambitious engineering. The highway has gained national significance because it represents one of the earliest applications of cliff-face road building as applied to modern highway construction. Lancaster emulated the European styles of road building in the Columbia River Gorge, while also designing and constructing a highway to advanced engineering standards. Throughout the route, engineers held fast to a design protocol that included accepting no grade greater than 5 percent, nor laying out a curve with less than a 200' turning radius. In rare cases where a tighter curve was used, Lancaster reduced grades and widened pavement. The use of reinforced-concrete bridges, combined with masonry guard rails, guard walls, and retaining walls brought together the new with the old--the most advanced highway structures with the tried and tested. In building the Historic Columbia River Highway, Lancaster artfully created an engineering achievement sympathetic to the natural landscape.⁵

In the days before the formation of a comprehensive state highway plan, Multnomah, Hood River, and Wasco counties cooperated, sometimes unwillingly, with the newly-formed Oregon State Highway Commission (1913) in constructing the Historic Columbia River Highway. Initially, a group of recently elected Multnomah County commissioners, strong supporters of the proposed route, resolved that the highway commission take charge of its road building activities, with access to \$75,000 in county tax revenues. Soon crews surveyed the route through Multnomah County and constructed one mile of road.

Boosters stumped for the route's completion to the Hood River County line. Local clubs sent out men and boys for weekend work parties to show public support for the undertaking. One photograph from the period, depicts work parties with picks and shovels in hand and placards such as "Gang No. 7, Portland Ad Club, Stalwarts," or "Gang No. 3, Portland Realty Board, We will ROCK the Earth." The highway received much patronage, although some citizens were less than enthusiastic about its construction. Opponents showed their views with placards declaring, "I WON'T WORK, To Hell With Good Roads, We Don't Own Autos." Many

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"mossbacks" had no use for good roads and were satisfied traveling the network of rutted, narrow, steeply-graded backwoods trails. Nevertheless, the public generally supported the highway's construction. Multnomah County Commissioners levied a direct tax sufficient to fund road building to the Hood River County line, and subsequently, the people voted a \$1 million bond issue to pave the road with asphalt.⁶

Other counties similarly supported this scenic highway innovation. In 1914, Hood River County voters approved the sale of \$75,000 in bonds to initiate their portion of the road's construction. Finally, in 1915, Wasco County commissioners financed a survey to locate the route through their jurisdiction. By 1916, though, the state highway commission was reorganized and given a greater mandate over state highway construction, taking much of it out of local hands. Passage of the Federal Aid Road Acts of 1916 and 1921 gave the Oregon State Highway Commission matching funding to complete the HCRH through Wasco County, and eventually to complete the route to its eastern terminus at Pendleton, in Umatilla County, by the early 1920s. At the same time, the state, working with counties west of Portland, completed another portion of the Columbia River Highway to the sea at Astoria. Eventually it became part of the national highway system and was designated part of U.S. 30.⁷

By the late 1930s, construction of Bonneville Dam, a New Deal project aimed at providing flood control on the Columbia River and generating electricity, caused a realignment of a portion of the Historic Columbia River Highway near Tooth Rock and Eagle Creek, in eastern Multnomah County. It was evident that the old highway was too outdated to provide safe efficient travel for modern motor traffic. By 1954 it was bypassed in its entirety from Troutdale to The Dalles by a new water-level route. This new road was subsequently upgraded to a four-lane divided roadway and eventually renamed Interstate 84. Only portions of the old route remained as a reminder of its early modern highway engineering accomplishments.

CROWN POINT VIADUCT

Chanticleer Inn, 22 miles east of downtown Portland in rural Multnomah County, was a frequent gathering place for the Historic Columbia River Highway's promoters. In 1912, it was as far as anyone could safely drive from Portland on the county road system before encountering the maze of steep goat trails and skidroads that passed through the Gorge. The innkeepers provided hearty chicken or game dinners served in a comfortable setting at an elevation of nearly 900'. Diners overlooking the Columbia River

were regularly treated to beautiful sunsets on the Gorge. After one such visit to Chanticleer, Lancaster was impassioned to write that:

"Standing here I realized the magnitude of my task and the splendid opportunity presented. Instinctively there came a prayer for strong men and that we might have sense enough to do the thing in the right way . . . so as not to mar what God had put there. . . . In that [gorge] to the east were hidden waterfalls and mountain crags, dark wooded, fernclad caves, and all else that a wise creator [sic] chose to make for the pleasure and enjoyment of the children of men."⁸

In September 1913, Lancaster began surveying for the highway between Chanticleer Inn and Multnomah Falls, 8 miles east. Lancaster's "first order of business was to find the beauty spots, or those points where the most beautiful things along the line might be seen to the best advantage, and if possible to locate the road in such a way as to reach them." The first of these was Thor's Heights, named after the Norse god of thunder, a 725' promontory less than 2 miles east of Chanticleer Inn and positioned such that one could see both up and down the Columbia River for nearly 40 miles. He originally planned to locate the highway at water-level, near the river, and around the base of Thor's Heights. However here, and throughout the gorge the Oregon-Washington Railroad and Navigation Company main line right-of-way took all the available space between the Columbia and nearby basalt formations. Because Lancaster saw the promontory as one of his beauty spots he included it on his alignment. He designed a circular road cut and sidewalk viaduct to spiral around the cliff top before making a descent to several waterfalls in the following ten miles. The owners of Thor's Heights gave right-of-way to the county and nearly one acre of ground on top of the rock for a public park to be under Portland's jurisdiction.⁹

In 1915 Lancaster referred to Thor's Heights as "Thor's Crown," but at some time Thor's Heights was renamed "Crown Point." The name was probably altered when the viaduct was completed; its ring of lamp standards encircling the cliff top gave it the appearance of a royal crown. One *Sunset Magazine* correspondent wrote that when the Crown Point Viaduct was illuminated at night with dozens of "electroliers," the promontory "looks for all the world like a huge jewel-set crown." To Lancaster, the old name Thor's Crown inspired him for his plan for a memorial for Crown Point. He believed, "The silent dignity of the pavilion, with its outline against the sky, will recall the ancient and mystic Thor's Crown, which the point was originally named." He proposed constructing a building of the

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Tudor Gothic-style on the horseshoe-shaped space within the viaduct as an observatory for travelers, as a memorial to the Oregon Pioneers, and as a public comfort station. He suggested it be known as "Vista House." Over fifty prominent Portland business and civic leaders, including Multnomah County Roadmaster John B. Yeon, retired lumberman and hotel owner Simon Benson, and *Oregonian* newspaper publisher H. L. Pittock, approved of Lancaster's idea in October 1915 and formed the Vista House Association to oversee the building's construction.¹⁰

In May 1916, the Multnomah County Board of County Commissioners was impressed by the idea and appropriated \$12,000 from the county emergency fund to begin construction of Vista House. Meanwhile, the HCRH was formally dedicated on June 8, 1916. Both Crown Point and Multnomah Falls hosted the event, with Crown Point being the site where a United States flag was unfurled at the touch of a button by President Woodrow Wilson at the White House in Washington, D.C.¹¹

Prominent Portland architect Edgar M. Lazarus, who was also a member of the Vista House Association, was selected as the structure's designer. He previously completed plans for several large houses in northwest Portland, along with several other structures. These included a 1903 addition to the U.S. Post Office and Court House, along with an under-the-sidewalk public comfort station at the nearby corner of Southwest Sixth and Yamhill streets. For Crown Point, Lazarus designed a reinforced-concrete domed octagonal building with basement restroom facilities, women's lounge and caretaker's quarters; a main floor visitor center; and an outdoor observation balcony. The building was sheathed in sandstone blocks and capped with a tile roof. Concentric circles of stairs ran from grade to the main floor entrances. Vista House was completed in May 1918, nearly two years after the formal highway dedication, and nearly \$80,000 over original cost estimates at \$100,000.¹²

In the fall of 1915, an entrepreneur named R. T. Dabney, who owned much of the land adjoining the top of Crown Point, proposed building a hotel at the cliff's edge, to the north of the viaduct. *Portland Oregonian* reporter Marshall N. Dana wrote that "in structure it will partake of the solidity of the cliffs. In architecture and attitude it will command the view like a castle on the Rhine." Dabney planned for a Tudor Gothic-style structure visible from the railroad and the river below, but inconspicuous from Vista House. Travelers could reach it by automobile on the Historic Columbia River Highway and by an inclined railway from a railroad siding below. He even sought Lancaster's advice, and brought Lazarus in to render plans, with the hope of opening his hotel by tourist season in 1916. One "giant feature" that Dabney

envisioned was a pipe organ to be known as the "Voice of the Gorge," along with an echo organ placed a half a mile away and under such wind pressure that its tones might be heard for miles up and down the river. The main organ's five manuals and many ranks of pipes could "produce something to interpret the voice of nature and those subtle reflexes of which nature is so full of." The echo organ could produce the "voice of the firs," which imitated wind blowing through trees, or the "tempest," which could reproduce "the lowest moaning of the wind to the most awful shriek that ever came through the gorge." Finally, another would "imitate the patter of rain." This fanciful proposal remained unrealized; Dabney never built his hotel or the organ. However, Lancaster's dream of a pavilion of honor had come true.¹³

DESIGN AND DESCRIPTION

Crown Point Viaduct - reinforced-concrete

The viaduct's purpose was to convey motor vehicles around the promontory. This was to be accomplished in as close a curve as possible, without being any tighter than the minimum 100' turning radius that Lancaster and others set out when they began designing the Historic Columbia River Highway. From the point, vehicles traveled east down a series of "Figure Eight" curves from Crown Point's elevation of 725' to a crossing of Latourell Creek at 200', or west along a section of the Historic Columbia River Highway that gained over 100' in less than two miles before it reached Chanticleer Inn. The viaduct and road cut "fits the top of this rock like a hat rim," wrote one columnist, as it circles through 225° with beginning and ending points reading at approximately southwest and southeast on a compass. It had a turning radius of 110'.¹⁴

The viaduct provided a means for adding a sidewalk, parapet wall and light poles onto the outer edge of the roadway. The road was founded on the point itself, placed around it on cuts and fills, but the viaduct's substructure did serve the roadway by providing retaining walls. The retaining walls were constructed with twenty-eight 20'-0" reinforced-concrete slab spans resting on outer reinforced-concrete columns and inner concrete footings. The slabs form portions of a 7' sidewalk, and support a 4'-0" reinforced-concrete parapet wall. Total length of the viaduct is 560'. Originally, twenty-nine reinforced-concrete lamp standards with spherical globes ran at regular intervals along the viaduct's concrete parapet wall. They were placed on top of the concrete support columns, which were engaged with the parapet wall. One of the state highway department's design engineers remarked about the railing and lights that, "at night there will be presented to the view of the travelers, who

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hurry by on the trans-continental trains and boats, far below, a halo light suggesting the name which this view point carries."¹⁵

The viaduct has a relatively straightforward substructure, only complicated by the terrain. In its most basic form, it consists of the outer 12" x 12" columns with footings, and a set of inner footings resting on the uphill ledge. As the viaduct spirals around the point from west to east, it drops in elevation. At the same time, the outer columns lengthen as land below falls away. Retaining walls, in which the viaduct's inner footing were anchored, vary between vertical reinforced-concrete structures and dry masonry batter structures. Finally, on the portions where outer columns and concrete retaining walls were used, 12" x 12" inclined struts were inserted between the base of the outer column and a buttress curb of the wall. These struts added stability to the structure and are similar to those used on the West and East Multnomah Falls viaducts (HAER Nos. OR-36-G and OR-36-J), less than 10 miles to the east. Nevertheless, they did not appear on portions of the structure where the batter walls were used, even when the columns were the longest, at 10' to 15'.

Crown Point Viaduct - masonry

On his trip to Europe with Hill and others in 1908, Lancaster marveled at the extensive use of masonry walls, especially in Switzerland and Italy. Unsubstantiated stories suggest that he imported Italian masons to construct the many miles of basalt guard rails, guard walls, and retaining walls seen throughout the Historic Columbia River Highway. Masons with Italian surnames built the structures, but whether they came from Italy to work on the road has not been proven. The Crown Point Viaduct site includes many feet of masonry structures. A curved masonry guard rail runs for 225° of a circle between Vista House and the roadway from the southwest to the southeast. It originally consisted of a 30"-tall random rubble slip-form wall, 12"-wide with a 14"-wide screeded concrete cap. Parabolic arched drainage openings were placed regularly at curb level. Even though these cutouts have no real purpose (the curb along Vista House's parking lot directs rainwater runoff), they echo a common masonry motif seen throughout the HCRH. The wall was pierced by a staircase north of Vista House that provides access to the building's lower level and to the roadway as it makes its descent. Dry masonry random rubble walls at a batter of 45° encircle Crown Point and retain the hillside between the masonry guard rail and the roadway. These walls are similar to those found under the viaduct that hold the roadway.¹⁶

REPAIR AND MAINTENANCE

To the untrained eye, Crown Point Viaduct looks as if it remains unchanged since its completion in 1915. In reality, it includes many replacement structures which are sympathetic or unsympathetic to the original construction. The masonry guard rail at the top of the upper embankment retaining wall has received some major modifications. Only the portion west of the north-facing staircase is original. The eastern portion was rebuilt in the mid-1930s because it failed. Its replacement, though in sympathy with the extant western portion, is different. Instead of replicating the original wall with slip-formed grouted random rubble on both elevations, masons chose only to use the random pattern on the outer elevation, and substituted ashlar or rectangular-cut basalt blocks for the interior of the curve (or the part facing Vista House). At its beginning point, where the steps lead northward and down to the spiraling roadway, the bannister was squared off, rather than being rounded and sculpted as was the original. In addition, masons placed ashlar posts at regular intervals along the new wall, and within these, they probably add reinforcement to prevent the wall from again bowing outward and possibly collapsing. Beyond the original semicircular portion of masonry guard walls, on the eastern end, a later wall of random rubble, and of smaller dimensions, was added to extend the original structure south and east.¹⁷

The dry masonry stone embankment, rising at 45° from the spiraling roadway below, is generally in good condition, though it has received inappropriate patching with mortar. This effectively traps moisture behind the wall and prevents it from percolating to the surface and could lead to extraordinary pressures which could "blow out" the wall. A dry masonry retaining wall was added to the site in the 1980s, just to the south and west of the viaduct's western beginning point. It serves as an end point for an additional parking area southwest of Vista House and the viaduct. Even though it is sympathetic to the design of other dry masonry retaining walls, it is a new structure and did not replace a previous wall.¹⁸

The north-facing concrete staircase, immediately north of Vista House, has received very bad treatment in the last 40 years. A 1955 heating system for Vista House required installing a furnace flue in the staircase landing. The masonry guard wall was extended across the top of the stairs to prevent visitor access to the area around the flue. Both obstructions were removed in the 1980s as part of a renewed interest in preserving Vista House and the surrounding structures.¹⁹

The concrete sidewalk and parapet railings on the Crown Point Viaduct have required continual maintenance. The absence of asphaltic felt expansion joints at critical points has created

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severe cracking of slabs. Joints are not continuous. For example, while deck slabs may have expansion joint separating them, there were no provisions made for expansion nearby at the curb nor along the parapet wall.²⁰

Below the deck, reinforcing bar corrosion has spalled the underside of the sidewalk slabs. Some portions of the concrete retaining wall have been undercut and appear to be resting on thin air. There is also some inappropriate patching of the dry masonry wall with mortared joints. Here as elsewhere, a buildup of moisture could cause the wall to fail. The reinforced concrete viaduct columns appear in good shape.²¹

Originally, the viaduct had 29 reinforced-concrete lamp standards topped with delicate spherical glass fixtures. They appeared like miniature global models of Earth with metal bands on them arranged like longitudinal and equatorial lines. There was one lamp post resting on top of each concrete outer support column between girder spans. This lamp design diverged greatly from those shown on original plans, which called for ornate brass fixtures on topping the columns. They had simple globes with a center one flanked by two others of like size, but a slightly lower and on ornate brass arms. Nevertheless, from early on, it was evident that the original glass spheres were not durable. Crown Point's severe winter weather, with winds approaching 100 miles per hour, accompanied by rain, sleet, and snow, were more than they could endure. They often collected ice during the day, only to shatter at night when illuminated. Those that the winter elements did not wreck, vandals destroyed. It appears that by either the mid-1920s or mid-1930s, half of the lamp poles were removed and those left were fitted with new polygonal Gothic-style cast brass lighting fixtures. In 1979, the original posts were replaced and have received continuing maintenance with surface applications of cement grout. At the same time, local Benson High School students recast the 1920s/1930s lamp fixtures at the school foundry.²²

ENDNOTES

¹For good syntheses of the Pacific Northwest good roads' movement, see John Kevin Rindell, "From Ruts to Roads: The Politics of Highway Development in Washington State" (M.A. thesis, Washington State University, 1987) and Hugh M. Hoyt, Jr., "The Good Roads Movement in Oregon, 1900-1920" (Ph.D. diss., University of Oregon, 1966); Oral Bullard, *Lancaster's Road: The Historic Columbia River Scenic Highway* (Beaverton, OR: TMS Book Service, 1982): 31; Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 112.

²Fahl, "S. C. Lancaster and the Columbia River Highway," 105-07.

³John Arthur Elliott, "The Location and Construction of the Mitchell Point Section of the Columbia River Highway" (C.E. thesis, University of Washington, 1929): 3.

⁴Samuel C. Lancaster to Amos S. Benson, 7 February 1914, folder "Multnomah County, 1914," box 4, RG 76A-90, Oregon State Archives, Salem.

⁵Dwight A. Smith, "Columbia River Highway Historic District: Nomination of the Old Columbia River Highway in the Columbia Gorge to the National Register of Historic Places, Multnomah, Hood River, and Wasco Counties, Oregon" (Salem, OR: Oregon Department of Transportation, Highway Division, Technical Services Branch, Environmental Section, 1984): 3.

⁶Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 111; Samuel C. Lancaster, "The Revelation of Famous Highways: A Symposium," in *American Civic Annual* (n.p., 1929), 109.; see photograph in the Oregon Historical Society collection, negative no. 38744; C. Lester Horn, "Oregon's Columbia River Highway," *Oregon Historical Quarterly* 66, no. 3 (September 1965): 261.

⁷*Second Annual Report of the Engineer of the Oregon State Highway Commission* (Salem, 1916): 26-30.

⁸Quote from Ronald J. Fahl, "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 114, originally appearing in *Portland Oregon Journal* (3 January 1915): picture supplement, p. 2.

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⁹Fahl, "S. C. Lancaster and the Columbia River Highway," 115 (quote); "The Columbia Highway in Multnomah County," by Samuel C. Lancaster, Consulting Highway Engineer, Assistant Highway Engineer, in *First Annual Report of the State Highway Engineer* (Salem, OR: 1914): 60; Marshall N. Dana, "New Hotel Will Make Crown Point the Mecca of Travelers," *Portland Oregon Journal* (8 October 1915): 5.

¹⁰Lewis A. McArthur, *Oregon Geographic Names*, 6th ed. revised and enlarged by Lewis L. McArthur (Portland: Oregon Historical Society Press, 1992), 226-27; Dana, "New Hotel Will Make Crown Point the Mecca of Travelers," 5; Howard O. Rogers, "A Day on the Columbia Highway, The Reward of One Who Overcame Indifference to Homemade Attractions," *Sunset, the Pacific Monthly*, n.d.[ca.1916]: 74; Nina Rappaport, et al., "Vista House Historic Structure Report," Columbia River Highway Project, Cascade Locks, OR, 1981, 3-4.

¹¹Rappaport, et al., "Vista House Historic Structure Report," 7.

¹²Ibid. 5-8, 45-46; [undated manuscript by Edgar Lazarus and edited possibly by John B. Yeon] "Columbia River Highway--Vista House, Specifications and Plans," 2/47, Mss 2607, Oregon Historical Society, Portland.

¹³Dana, "New Hotel Will Make Crown Point the Mecca of Travelers."

¹⁴H. M. White, "Oregon's State Highways," *Municipal Journal* 39, no. 10 (2 September 1915): 350.

¹⁵[untitled typed manuscript by K. P. Billner] in folder "Multnomah County, 1914," box 4, RG 76A-90, Oregon State Archives, Salem, 4-5.

¹⁶Ronald Fahl in "S. C. Lancaster and the Columbia River Highway," wrote that Lancaster implied that the masons had come directly from Italy to work on the HCRH. Nevertheless, Roy A. Klein, who served as the Oregon State Highway Engineer from the late 1910s to the early 1930s, recalled that "they came no further than the Italian neighborhoods of Portland. The state highway department had specifications for standard dry masonry rubble walls that any local laborer could have followed." See Fahl, 142, note 92.

¹⁷Interview with Richard Fix, ODOT mason on the HCRH, by Robert W. Hadlow and Elaine G. Pierce, Summer 1995.

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¹⁸Interview with Richard Fix.

¹⁹Rappaport, et al., "Vista House Historic Structure Report,"
38-39; Interview with Richard Fix.

²⁰Interview with Richard Fix.

²¹Interview with Richard Fix.

²²Rappaport, et al., "Vista House Historic Structure
Report," 12, 39; see also original linen drawing in Bridge No.
4524, Maintenance Files, Bridge Section, ODOT, Salem. The cast
brass lamp fixtures appear identical to others over a closed
Southwest Fifth Avenue entrance to the Multnomah County
Courthouse, in downtown Portland.

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SOURCES CONSULTED

- Allen, John Eliot. *The Magnificent Gateway: A Layman's Guide to the Geology of the Columbia River Gorge*. Forest Grove, OR: Timber Press, 1979.
- Billner, K. P. "Design Features of Various Types of Reinforced Concrete Bridges Along the Columbia Highway in Oregon." *Engineering and Contracting* (10 February 1915): 121-23.
- _____. "Some Bridges on the Columbia Highway." *Engineering News* 72, no. 24 (10 December 1914): 1145-49.
- Bowlby, Henry L. "The Columbia Highway in Oregon." *Engineering News* 73, no. 2 (14 January 1915): 62-64.
- _____. "The Columbia Highway in Oregon." *American Forestry* 22, no. 271 (July 1916): 411-16. Also reprinted with several articles from *Contracting* [1916], 12-19.
- Fahl, Ronald J. "S. C. Lancaster and the Columbia River Highway: Engineer as Conservationist," *Oregon Historical Quarterly* 74, no. 2 (June 1973): 101-44
- Fix, Richard. Oral Interviews with the present mason working for the Oregon Department of Transportation on the Historic Columbia River Highway.
- Historic American Engineering Record Inventory Cards: Columbia River Scenic Highway." Prepared by Dwight A. Smith, Highway Division, Oregon Department of Transportation, August 1981.
- Horn, C. Lester. "Oregon's Columbia River Highway," *Oregon Historical Quarterly* 66, no. 3 (September 1965): 249-71.
- Howard, Randall R. "Through the Columbia River Gorge by Auto." *Sunset Magazine* (August 1915): 303-06, 386-88.
- Lancaster, Samuel C. "The Revelation of Famous Highways: A Symposium," in *American Civic Annual* (n.p., 1929): 107-11.
- Lockley, Fred. *History of the Columbia River Valley from The Dalles to the Sea*. Chicago: S. J. Clarke Publishing Co., 1928.
- Multnomah County Archives. Clerk of the Board of County Commissioners Road Files.

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- Oregon Historical Society. Mss 2607, Multnomah County Roadmaster Records.
- Oregon State Archives. RG 76A-90, Oregon State Highway Department, General Correspondence Files.
- Oregon State Highway Department. *Annual and Biennial Report*. Salem, 1914-22.
- Orr, Rick, and Stephen Dow Beckham. "Cultural Resource Overview and Investigations for the Bonneville Navigation Lock Project, Oregon and Washington." For the U.S. Army Corps of Engineers. 1984.
- Rappaport, Nina, William Manlove, Stephanie S. Toothman, Ana Beth Koval, Patricia Fletcher, and Donnie G. Seale, "Vista House Historic Structure Report," Columbia River Highway Project, Cascade Locks, OR, 1981.
- Rogers, Howard O. "A Day on the Columbia Highway: The Reward of One Who Overcame Indifference to Homemade Attractions." *Sunset, the Pacific Monthly* (n.d.): 72-80.
- Smith, Dwight A. "Columbia River Highway Historic District: Nomination of the Old Columbia River Highway in the Columbia Gorge to the National Register of Historic Places, Multnomah, Hood River, and Wasco Counties, Oregon." Salem: Oregon Department of Transportation, Highway Division, Technical Services Branch, Environmental Section, 1984.

DATA LIMITATIONS

There are volumes of literature on construction of Vista House, including a large set of original construction drawings, a National Register of Historic Places nomination, and historic site surveys. Nevertheless, the literature on Crown Point Viaduct is scarce, with passing references to its construction in several sources. Most information on inconsistencies of design in the current set of masonry guard walls came from oral interviews with the Oregon Department of Transportation mason Richard Fix who has rebuilt many basalt structures and reinforced-concrete structures throughout the HCRH.

APPENDIX - VIADUCTS

Viaducts, often bridges resting on a series of narrow reinforced-concrete piers or bents and carrying a road over a valley, cleft, or concavity, have many forms on the Historic Columbia River Highway. They were used primarily to keep construction costs down when alternative road alignments meant expensive grading or "developing distance" by building extra lengths of road to maintain a grade no greater than 5 percent.

FULL VIADUCTS

Mitchell Point Viaduct (HAER No. OR-36-R)

At the west approach to Mitchell Point Tunnel (HAER No. OR-36-R), engineers designed a 193'-0" reinforced-concrete slab and girder type viaduct. The viaduct was supported on sets of columns 15'-6" apart center-to-center, and 32'-0" longitudinally to carry the Historic Columbia River Highway from a cliff cut over a talus slope concavity to a tunnel portal. Locating this structure was difficult because the talus slope below over was unstable, making it hard for crews to locate firm footings for bents. Excavations were done by hand and proved very time consuming.

The Mitchell Point Viaduct was a fairly nondescript structure with precast railing panels. Yet it was functional with an understated aesthetic component that prepared motorists for entering the Mitchell Point Tunnel, which some have called the most inspiring part of the Historic Columbia River Highway. The tunnel and viaduct were completed in 1915. A new water-grade route for U.S. 30, mostly built on fill from river dredging, was completed from Portland to The Dalles by the early 1950s. Oregon highway officials closed Mitchell Point Tunnel and consequently the adjoining viaduct in 1953 and backfilled the tunnel in an attempt to stabilize the basalt formations of Mitchell Point. In 1966, as part of a widening project to upgrade the water-level route to a four-lane interstate highway, a large portion of Mitchell Point, including the tunnel and viaduct, were destroyed.

West and East Multnomah Falls viaducts (HAER Nos. OR-36-G & OR-36-J)

The road alignment immediately west and east of Multnomah Falls runs between the Oregon-Washington Railroad and Navigation Company main line and a steep mountainside. There were no realistic alternate alignments for the Historic Columbia River Highway here because the railroad tracks ran next to the river's edge. Engineers avoided marring the natural landscape wherever possible and often saw the best solution for creating satisfactory alignments was to construct the road on fill behind

solid dry masonry retaining walls. However, for the West and East Multnomah Falls viaducts they needed to bridge very steep and unstable slopes that were susceptible to slide action. Even minimal cutting and filling at the toe of these mountainsides, held together by underbrush and timber, might cause rock and debris avalanches to cover the roadway and, probably more importantly, block the railroad's main line.

The West Multnomah Falls Viaduct is 400' in length and consists of twenty 20' reinforced-concrete slab spans. The deck is supported by two parallel rows of 16"-square columns, or bents, 17'-6" apart. The corners were chamfered, both for aesthetic purposes and to eliminate sharp corners prone to chipping. This shape also facilitated removing the formwork. Roadway width is about 18'. The design engineer K. P. Billner included inclined struts between the footings of the inside and outside piers because he saw a need to guard against settling of the upper columns and to achieve greater structural stability. With confidence he believed that they could "carry the weight of the structure." The East Multnomah Falls Viaduct is identical to the West Multnomah Falls Viaduct, except that it is 860'. Both were completed in 1914.

HALF-VIADUCTS

Engineers designed half-viaducts for several locations on the highway also to skirt hillsides. They were constructed much like viaducts with unequal-length columns, except that the inside bents consisted only of footings and the inside elevations were anchored into the hillsides or masonry walls. Because of the half-viaducts' inconspicuous design, motorists often did not realize that they were not traveling on regular highway pavement with masonry guard rails.

Toothrock and Eagle Creek Viaducts (HAER No. OR-36-N)

High above the river, Toothrock and Eagle Creek Viaducts (HAER No. OR-36-N) (224') carried the highway around Toothrock, a tall basalt cliff, high above the river before dropping down to Eagle Creek. Their designs differ only in their railing treatment, where Toothrock Viaduct uses a concrete spindle and cap design, Eagle Creek Viaduct uses a masonry rail and concrete cap design. Their purpose was to minimize costs but create sound structures with an aesthetic component. Completed in 1915, they were abandoned in 1937 at the completion of Toothrock Tunnel and a new water-level realignment of the trunk route near Bonneville Dam.

Ruthton Point Viaduct

Ruthton Point Viaduct, completed in 1918, is a 50' structure consisting of three reinforced-concrete deck girder spans (20',

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20', and 10') carrying the highway near a promontory west of Hood River. It used a simple standardized concrete railing panel and cap. It was bypassed when the new water-level route for U.S. 30 was completed in the early 1950s. Since then it fell into disrepair, but in the early 1990s, as part of an Oregon Department of Transportation restoration project on the HCRH, Ruthton Point Viaduct was reconstructed to be part of a pedestrian and bicycle accessible trail along once abandoned sections of the route.

Rock Slide Viaduct

The 34' Rock Slide Viaduct, completed in 1920, lies a short distance west of the Mosier Twin Tunnels. The viaduct was probably necessary, rather than a dry masonry retaining wall, because of the unstable nature of the basalt slope. The viaduct's uninterrupted roadway surface and the continuous arched rubble parapet railing made it difficult for travelers to identify the structure from the road. In the late 1940s and early 1950s, the Oregon State Highway Department completed a water-level route for U.S. 30 along the Columbia River. In 1953, it finished the section between Hood River and Mosier and closed the Mosier Twin Tunnels. The portion of the HCRH from Hood River to the tunnels' west approach, including Rock Slide Viaduct, became part of Hood River County's extensive road system.